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The Role of Physical Activity in the Prevention of Falls in Older Age.

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Introduction

- Falls are costly for the individual and society
- Regular participation in physical activity is integral to good health and independence. Also lowers risk for falls and fall-related injuries.
- Most promising fall prevention strategies include physical activity or exercise

Falls Are Preventable

- ***Many identifiable risk factors***
  - ***Muscle Weakness****
  - ***Balance/gait problems****
  - ***Prior fall***
  - ***Vision****
  - ***ADL limitations****
  - ***Depression*/dementia***
  - ***Medications***

- ***Intervention programs work!***
  - ***Evidence shows 20-50% ↓ fall rates***
  - ***"3 E's": Evaluation, Exercise, Environment***
- ***Systematic approach needed***

Roles for Physical Activity

- **Primary**

  Prevent onset of pathology and system impairments

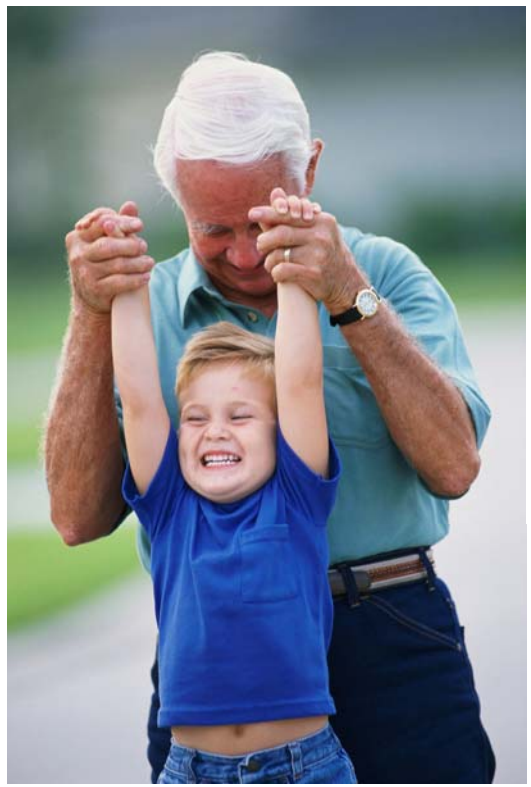
- **Secondary**

  Slow progression of disease and system impairments

- **Tertiary**

  Restoration of function to level that allows for independence in performance of daily activities

Freedman et al. 2006



Benefits of Physical Activity in Reducing Falls

- Effective in improving balance and/or reducing fall incidence rates
  - Different settings (community, home)
  - Varied durations, intensity, frequency, and type of exercise
  - Different levels of risk
  - Group versus individually tailored home exercise programs
  - Type of provider

Effective Interventions include:

- Multicomponent exercise programs
- Gait, balance, motor coordination, and functional tasks
- Tai Chi
- Dance
- Walking

BUT not across all levels of risk

Why are the Research Findings Mixed?

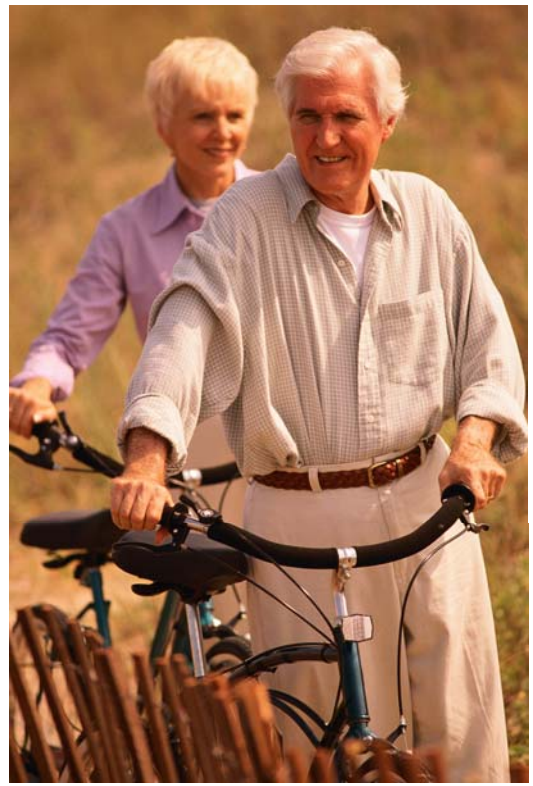
- **Methodological Weaknesses**
  - Poor design and/or treatment of data
  - Small sample sizes
  - Insufficient information (e.g., randomization, blinding, intervention content)
  - Limited follow-up data
  - Non-standardized outcome measures and timing of follow-up assessments
  - Varied dosage (frequency, intensity, duration)
  - Little or no information about adherence, adverse events.
  - Outcome measures often incongruous with type of intervention and/or limit generalization to daily function.

Translating Research into Practice

- Role and type of physical activity may differ according to level of fall risk
- Specificity, intensity, frequency, and duration of intervention needs to reflect level of fall risk
  - Well-rounded programs
  - Individually tailored programs
- Physical activity programs may need to include behavioral component for long-term participation

Translating Research into Practice

- In 2005, only 48.1% of older Americans met recommended PA guidelines
- Physical inactivity levels even higher among older adults with disability (56% report no leisure time activity).
- Factors that influence initiation and long-term participation vary by race, gender, level of disability, age.

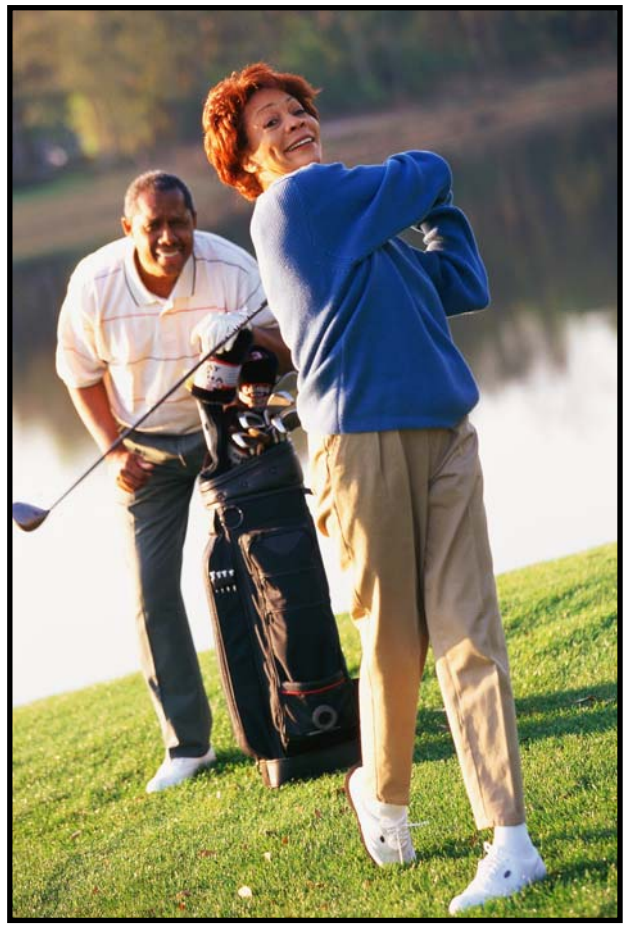


Current Recommendations?

- Any type of moderate intensity activity that results in small increases in heart rate.
- At least 30 minutes per day
- At least 5 days per week

OR

- Vigorous Activity that results in large increases in HR
- At least 20 minutes per day
- At least 3 days per week



Core Ingredients?

- **Whole body functional activities that focus on improving:**
  - ✓ Muscular endurance
  - ✓ Muscular strength and power
  - ✓ Aerobic endurance
  - ✓ Flexibility

Core Ingredients?

- **Activities that stimulate multiple dimensions of balance:**
  - ✓ Processing and integration of sensory information
  - ✓ Anticipatory and reactive control of action
  - ✓ Allocation of attention
  - ✓ Multidirectional and segmental coordination activities

Low-Risk: Physical Activity Serves Primary Role in Preventing Onset of Disability

- Many activity choices available
- Simplest and least resource intensive is walking.
- Acceptable among ethnically diverse groups.
- Walking poles can be used to increase energy expenditure or provide increased stability.

Moderate Risk: Physical Activity Serves Secondary Role in Slowing Progression of Disease/Impairment

- Benefit from programs more tailored to individual needs
- Specific balance and gait activities selected on basis of comprehensive evaluation of system impairments

High Risk: Physical Activity Serves Tertiary Role by Raising Physical Capacity to Perform BADLs

- Carefully tailored exercise program as part of a multifactorial intervention strategy
- Emphasis on building strength and endurance levels in a seated or supported standing position until balance and gait activities can be included.

Future Research Directions

- Lingering questions remain to be answered:
  - ✓ What type(s) of physical activity is most effective in reducing falls?
  - ✓ How does level of fall risk influence type and intensity of intervention strategy?
  - ✓ What type(s) of intervention strategies are effective in promoting long-term participation in physical activity and fall prevention activities across fall risk levels?

Future Research Directions

- Should a reduction in falls constitute the only outcome used to judge effectiveness?
- How do factors of ethnicity, socioeconomic status, and geographical location affect the type of physical activity intervention implemented?
- Is exercise effective in lowering fall risk among physically frail or cognitively impaired?

Summary

- Physical activity has an important role to play in preventing or lowering risk for falls in most settings.
- The specific type, intensity, duration, and frequency of physical activity selected is influenced by level of fall risk.
- Including a behavior-change component in any physical activity program will be critical for long-term participation in fall prevention activities.

Mahalo!

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